CyberDome II

Installation Manual

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Intended use

Use this product only for the purpose it was designed for; refer to the data sheet and user documentation. For the latest product information, contact your local supplier or visit us online at *www.gesecurity.com*.

FCC compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

You are cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Regulatory

CE

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Preface

This is the GE *CyberDome II Installation Manual*. This document includes an overview of the product and detailed instructions explaining:

- how to install the housing; and
- how to attach the camera.

There is also information describing how to contact technical support if you have questions or concerns.

To use this document effectively, you should have the following minimum qualifications:

- a basic knowledge of CCTV systems and components; and
- a basic knowledge of electrical wiring and low-voltage electrical connections.

Read these instructions and all ancillary documentation entirely before installing or operating this product. The most current versions of this and related documentation may be found on our website. Refer to *Online publication library* on page 37 for instructions on accessing our online publication library.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Conventions used in this document

The following conventions are used in this document:

Bold	Menu items and buttons.
Italic	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
Blue italic	(Electronic version.) Hyperlinks to cross-references, related topics, and URL addresses.
`Monospace`	Text that displays on the computer screen.
	Programming or coding sequences.

Safety terms and symbols

These terms may appear in this manual:

CAUTION: *Cautions* identify conditions or practices that may result in damage to the equipment or other property.

WARNING: *Warnings* identify conditions or practices that could result in equipment damage or serious personal injury.

Chapter 1 Introduction

This chapter provides an overview of your CyberDome II dome system, including product contents and system requirements.

In this chapter:

Installation overview 2
Product description 2
Product contents 2
System requirements 3
Operational requirements 3
Minimum load requirements 5
Cable requirements 5
Cable management 6
Power requirements 7
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Installation overview

The installation of domes has been made much easier with many innovations that are now available in the CyberDome II™ line of domes. All coaxial, UTP (certain models only), and data connections are built into the housing, and configuration parameters are stored in the housing as well. Addressing is still done on the camera. Housing memory allows you to replace cameras or move them between housings without having to reprogram them for each new site. As you install the first dome, you will find many other enhancements that make installation easier and quicker.

The general steps for installing your dome include:

- preparing the mounting surface and installing the mount (if used) and housing;
- preparing the cables and wiring the housing;
- addressing the camera site, setting the protocol, and setting the termination;
- installing the PTZ camera assembly; and
- installing the dome.

Product description

CyberDome II is a line of advanced pan/tilt/zoom (PTZ) cameras. In addition to powerful cameras, CyberDome II features a graphical programming interface for easier customization of camera settings, and passcodes for protection against unauthorized access.

The CyberDome II protocol is backward compatible with the Digiplex protocol. You can replace older PTZs in an existing Digiplex system with CyberDome II PTZs. You can also place just the camera in a CyberDome housing, however; some of the functionality will not be there.

Be aware that the power requirements for CyberDome II and CyberDome are different. Refer to *Power requirements* on page 7 and *Power cable size and length requirements* on page 7.

Product contents

The CyberDome II consists of the following:

- Housing.
- Package containing two connectors (one two-pin for power and one six-pin for UTP video and data), and a small screwdriver.

  Note: The select version of CyberDome II will only have a 2-pin connector for primary RS-485 data. There is no UTP video or auxiliary RS-485 data.

- Manuals (installation and user, which covers programming and operation).
- PTZ camera assembly.
- Dome (mirror domes are shipped with cotton gloves for special handling).
- Mount (wall-mount and flush-mount versions only).

You may receive the package contents in one large carton containing three boxes (four with wall-mount versions), or if shipped individually, you may receive three (or four) separate boxes. One box will contain the

housing, connectors, and manuals. The PTZ assembly, dome, and mount (for wall-mount versions) are each shipped in separate boxes.

Inspect the packages and contents for visible damage. If any components are damaged or missing, do not use the unit; contact the supplier immediately. If you need to return the unit, you must ship it in the original box.

System requirements

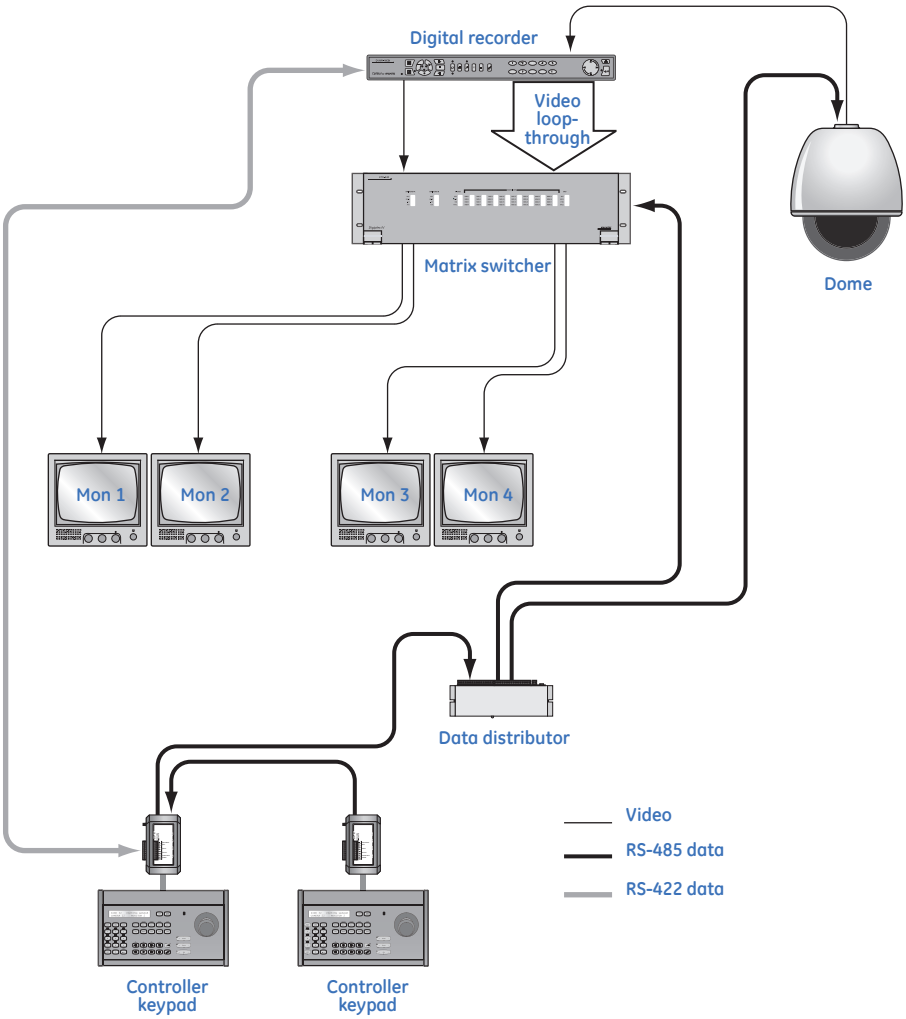
For proper operation, adhere to the following operational, load, cable, and power requirements for CyberDome II domes.

Operational requirements

CyberDome II contains a built-in receiver that decodes commands originating from a compatible controlling device, such as a keypad or ASCII control software. A minimum of one controlling device is required for operation. See *Figure 1*. From the keypad, an operator can pan, tilt, and zoom the camera, find presets, and start preset and ShadowTours. A typical advanced system is shown in *Figure 2* on page 4. For additional details, refer to the data sheet, user manual, or application guide.

Figure 1. Basic point-to-point system

Figure 2. Typical advanced system



Minimum load requirements

Table 1 lists the load requirements for all CyberDome II dome configurations.

CAUTION: For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes.

Table 1. Minimum load requirements of dome configurations

Minimum load	Dome configuration
100 lb.	• Rugged, cast aluminum pendant-mount housing (with any mount) • Heavy-duty housing (with any mount) • Pressurized housing gooseneck (specia) • Swing-arm mount (with any dome except heavy duty or flush-mount)
50 lb.	All other dome and mount configurations

Cable requirements

Table 2 lists the requirements for the cables that connect to the dome.

Table 2. Cable requirements

Operation	Cable requirement	Length	
		feet	meters
Data	**For RS-422:** 22 gauge (0.64 mm) *unshielded*, two-conductor, twisted-pair (UTP) cable	10,000	3,000
	For RS-485: 22 gauge (0.64 mm) *shielded*, two-conductor, twisted-pair (STP) cable	3,000	900
Power	24 VAC cable. To determine the size of cable needed for individual applications, see *Power cable size and length requirements* on page 7.		
Video	75 ohm coaxial cable; or 22 gauge (0.64 mm) unshielded, two-conductor, twisted-pair (UTP) cable **Note:** Use only crimp-on BNC connectors. Do not use screw-on connectors.		

Note: When using unshielded twisted-pair cable for video and data, the wires can share the same jacket but must remain separate twisted pairs.

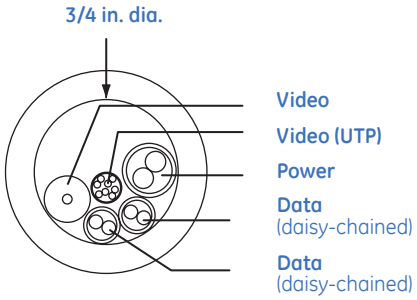
Cable management

Follow all local codes for cable management. As a general rule, you can fill a cable conduit to a maximum of 60% of its capacity. You must maintain 40% free space. A variety of factors will determine how many cables you can run into the dome. Capacity limitations include:

- number of cables
- size of the cables
- use of single-conductor or multiple-conductor cable
- use of a junction box

Figure 3 provides an illustration of the cable capacity of three typical applications. *It is important to note that all cables of the same gauge are not of the same diameter.* Manufacturer, shielding, and rating affect the actual diameter of cables of the same gauge. GE leaves the selection of the appropriate cable to the discretion of the installer who is working with the local codes of the installation site.

Figure 3. Three acceptable typical cabling scenarios



- Percentage conduit fill = 38%
  - Video: one 59U/6U coaxial (0.24 in. dia)
  - Video (UTP): CAT 5 (0.16 in. dia)
  - Data: two 20 AWG UTP (0.19 in. dia)
  - Power: one 16 AWG UTP (0.25 in. dia)

Note: This graphic shows two types of wiring for video, UTP, and coaxial. Only one can be used at a time.

Power requirements

All CyberDome II domes require a 24 VAC power supply to operate the domes' PTZ, camera, and heater/blower, if present. The startup and running power requirements vary depending on the model (*Table 3*).

CAUTION: Use only a Class 2 power supply of the required output rating as listed on individual units and specified.

Table 3. Power requirements at 24 VAC (±4 VAC) operating voltage

Model	Start-up power	Running power	Minimum power source to use
Dome with fan	25 VA	20 VA	40 VA
Dome with 12 W heater/fan (x2)	93 VA	45 VA	56 VA
Rugged and HD dome with 23 W heater/fan (x2)	153 VA	66 VA	100 VA

Power cable size and length requirements

Using the proper gauge of power cable will ensure proper operation and avoid voltage drops. See *Table 4* for the recommended cable gauge for varying maximum cable lengths and power draws.

WARNING: Be aware that the power requirements for CyberDome II and CyberDome are different, which may require new cabling when replacing CyberDomes with CyberDome II domes.

Table 4. Recommended power cable gauges based on maximum lengths for an operating voltage of 24 VAC (±4 VAC)

Wire gauge		Domes with fan (20 VA)		Domes with 12 W heater/blower (x2) (45 VA)		HD domes with 23 W heater/fan (x2) (66 VA)	
AWG	mm2	feet	meters	feet	meters	feet	meters
10	2.60	1569	478	784	238	490	149
12	2.05	988	301	494	150	309	94
14	1.62	620	188	310	94	194	59
16	1.29	391	119	196	59	122	37
18	1.02	246	74	123	37	77	23

Chapter 2 Installing the housing and cables

This chapter provides instructions for installing the housing and cables.

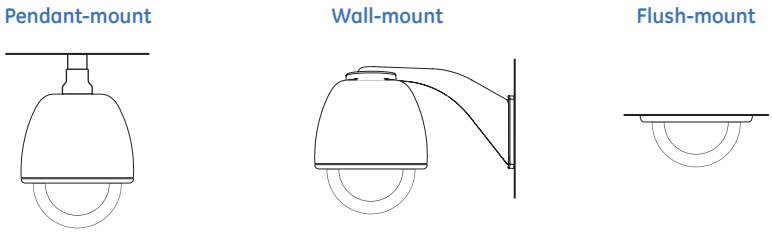
In this chapter:

Various mounting and housing styles 10
Flush-mount housings 11
Preparing the mounting surface 11
Installing the housing 12
Pendant-mount housings 14
Preparing the mounting surface 14
Installing the housing 15
Preparing the cables 17

Various mounting and housing styles

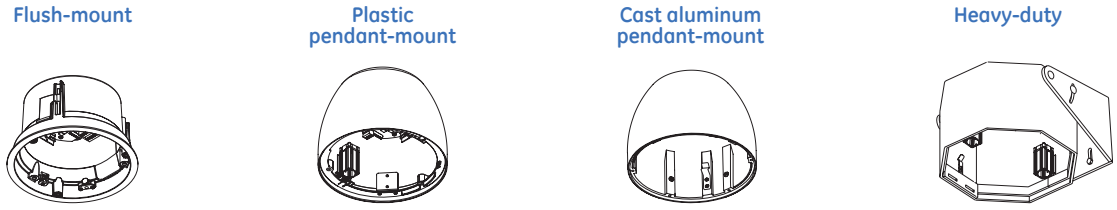
There are three basic mounting styles: pendant, wall, and flush. A pendant-mount lowers a dome from a ceiling, a wall-mount extends a dome from a wall, and a flush-mount raises a dome's dome even with a ceiling. See *Figure 4*. This document provides the instructions for all mounting styles.

Figure 4. Basic mounting styles



There are four basic housing styles: flush-mount, plastic pendant-mount, cast aluminum pendant-mount, and heavy-duty (*Figure 5*). Installation is generally the same for all housing styles. There are some differences, such as how the dome rings attach to the housings (*Figure 19* on page 31). Where differences exist, the instructions will specify.

Figure 5. Basic housing styles



Flush-mount housings

Flush-mount and pendant-mount housings require different preparation of the mounting surface and different installation procedures of the housings. Follow the instructions given here for flush-mount housings.

CAUTION: The flush-mount housing is for indoor applications only. Do not expose it to moisture, or the unit may become damaged.

Preparing the mounting surface

Following are the steps for preparing the mounting surface if you are mounting the housing directly into a solid surface that does not require reinforcement. If the mounting surface does require reinforcement, first install a GEA-113 T-bar ceiling panel or a GEA-114 T-bar support kit. Instructions for installing the GEA-114 are available in this manual (*GEA-114 T-bar ceiling support kit* on page 45). If you are installing a GEA-113, refer to the instructions that came with the panel (1052914).

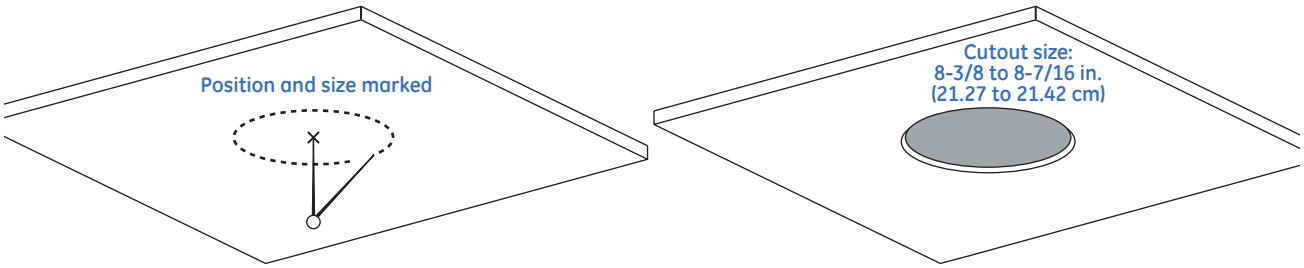
CAUTION: For all installations, heed these cautions:

- Complete all installation steps before supplying power to the dome.
- To ensure proper operation of a PTZ unit, install the mount level.
- For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes. See *Table 1, Minimum load requirements of dome configurations* on page 5.

To prepare the mounting surface, see *Figure 6* and do the following:

1. Mark the position and size of the housing passthrough hole on the mounting surface. The size of the cutout for the passthrough must be 8-3/8 to 8-7/16 in. (21.27 to 21.42 cm).
2. Following all local codes, cut the housing passthrough hole.
3. Make sure that the facility cables (data, video, and power) for the dome comply with the recommendations provided in *Cable requirements* on page 5.
4. Feed the facility cables through the housing passthrough hole in the mounting surface.
   - Pull enough cable to make connections. You can always cut off unneeded length later.
   - How many cables you have depends upon how many video, data, and power cables you are using. See *Wiring and the dome* on page 19.

Figure 6. Preparing the mounting surface for flush-mount housings being mounted into solid surfaces not requiring reinforcement



Installing the housing

With the surface prepared and/or the mount now installed, install the housing.

To install the housing, see *Figure 7* on page 13 and do the following:

1. Remove either conduit knockout (side or top) in the housing.
2. Hold the housing up near the housing passthrough of the mount or cutout.
3. Connect a steel safety cable, if required by local codes.
   a. Obtain a steel safety cable of 0.125 in. (3 mm) maximum diameter that complies with local codes.
   b. Snip off the nipple that opens access to the safety cable clip.
   c. Feed your safety cable through the exposed hole.
   d. Secure one end of the safety cable into the safety clip surrounding the exposed hole inside the housing.
   e. Secure the other end of the safety cable to the building superstructure.

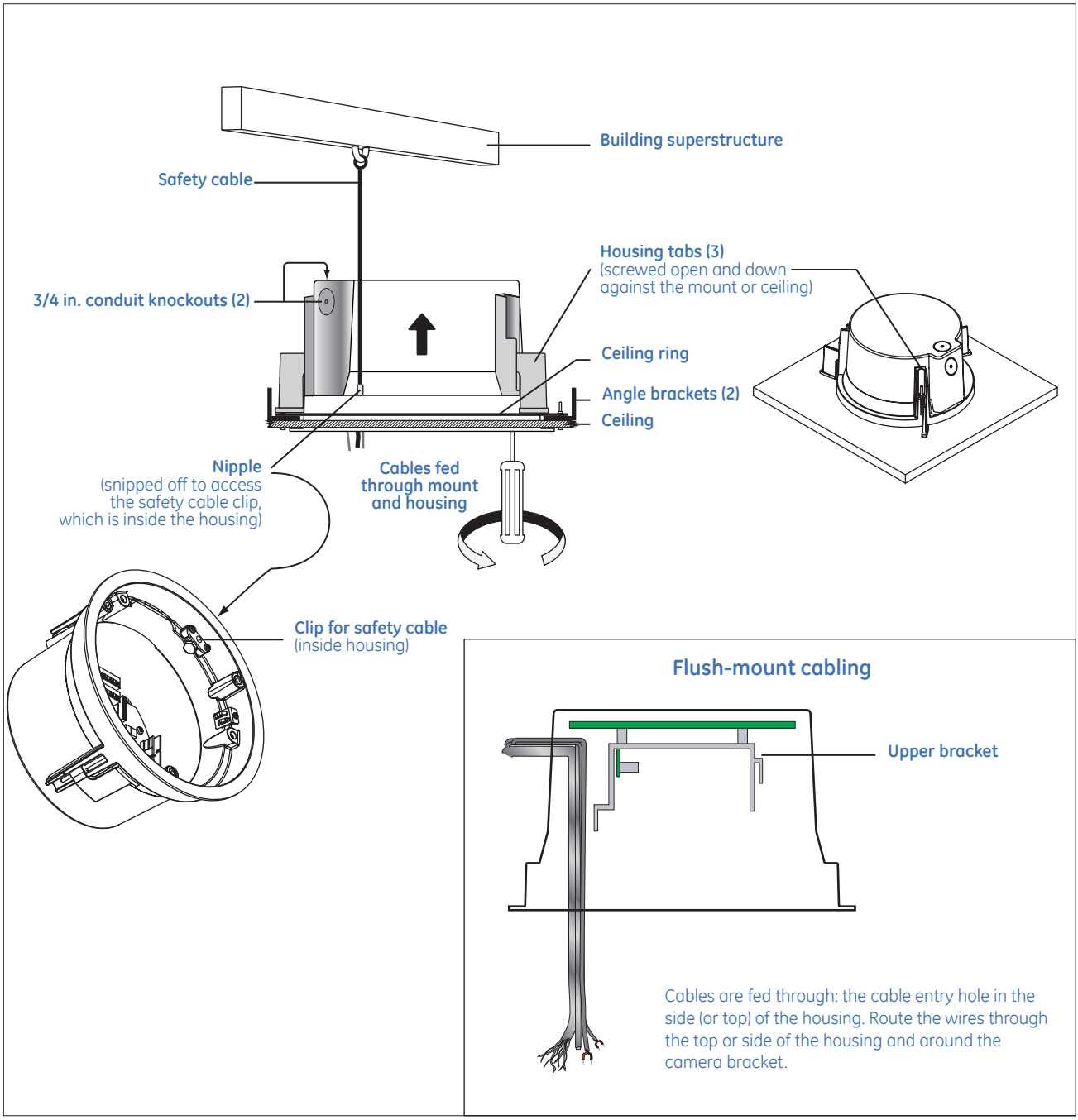
WARNING: Do not run any cables next to the heaters. Doing so could damage the dome or cause an electrical fire.

4. Feed the facility cables through the conduit hole of the housing. Allow enough cable length to make connections. *Figure 7* on page 13 shows how the cables run through the housing.

CAUTION: For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes. See *Table 1, Minimum load requirements of dome configurations* on page 5.

5. Attach the housing to the mount or ceiling by screwing the housing tabs open and down.

Figure 7. Installing the flush-mount housing


Building superstructure
Safety cable
Housing tabs (3)
(screwed open and down against the mount or ceiling)
3/4 in. conduit knockouts (2)
Ceiling ring
Angle brackets (2)
Ceiling
Nipple
(snipped off to access the safety cable clip, which is inside the housing)
Cables fed through mount and housing
Clip for safety cable
(inside housing)
Flush-mount cabling
Upper bracket
Cables are fed through: the cable entry hole in the side (or top) of the housing. Route the wires through the top or side of the housing and around the camera bracket.

Pendant-mount housings

Pendant-mount and flush-mount housings require different preparation of the mounting surface and different installation procedures of the housings. Follow the instructions given here for pendant-mount housings.

Pendant-mount housings can be mounted to a pipe to lower them from a ceiling or to a wall-mount arm to extend them from a wall. Instructions are provided in this document for both mounting methods.

Preparing the mounting surface

Following are the steps for preparing the mounting surface if you are mounting the housing to a pipe. If you are mounting the housing to the GEA-102 wall-mount arm, instructions for installing the GEA-102 are available in this manual (*Installing the wall-mount arm* on page 40). If you are installing one of the other mounts, refer to the instructions that came with the mount.

CAUTION: For all installations, heed these cautions:

- Complete all installation steps before supplying power to the dome.
- To ensure proper operation of a PTZ unit, install the mount level.
- For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes. See *Table 1, Minimum load requirements of dome configurations* on page 5.

To prepare the mounting surface:

1. Following all local codes, install the pipe.
2. Make sure that the facility cables (data, video, and power) for the dome comply with the recommendations provided in *Cable requirements* on page 5.
3. Feed the facility cables through the pipe in the mounting surface.
   - Pull enough cable to make connections. You can always pull back unneeded length later.
   - How many cables you have depends upon how many video, data, and power cables. See *Wiring and the dome* on page 19.

Installing the housing

With the pipe or mount now installed, install the housing.

If you are installing the housing outdoors and onto a pipe, you must install the rubber water-sealing boot that provides an additional layer of water protection. Applying PTFE thread sealing tape (for example, Teflon® tape) to the pipe is required as a first layer of protection.

CAUTION: Avoid getting rain or moisture in the housing so that the electronic components on the PCBs are not damaged.

To install the housing to a pipe or mount, see *Figure 8* on page 16 and do the following:

1. If you are installing the housing outdoors and onto a pipe:
   a. Spray the pipe with soapy water.
   b. Slide the rubber boot onto the pipe and above the threads.
   c. Wrap the pipe threads with the supplied PTFE thread sealing tape in the direction that the dome will screw onto the pipe. Overlap the tape and cover the threads.
   d. After you have attached the housing in the following steps, slide the rubber boot down the pipe and fit it securely over the housing's flange.
2. Hold the housing up near the pipe or mount. If you installed the GEA-102 wall-mount arm, make sure that the safety chain is securely attached (*GEA-102 wall-mount arm* on page 40).

WARNING: DO NOT run any cables next to the heaters. Doing so could damage the dome or cause an electrical fire.

3. Feed the facility cables through the dust seal in the top of the housing. Allow enough cable length to make connections. *Figure 8* on page 16 shows how the cables run through the housing.

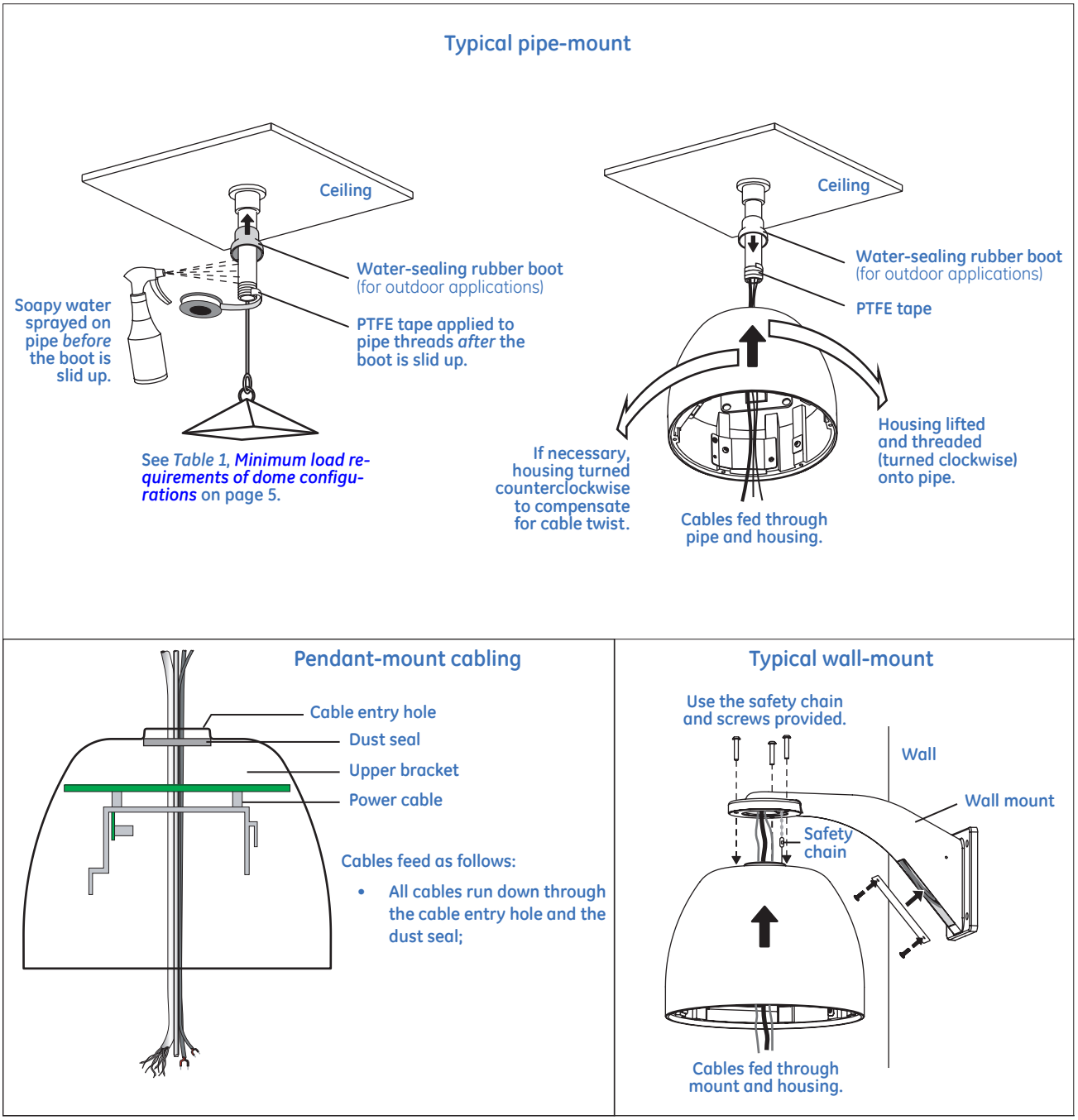
CAUTION: For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes. See *Table 1, Minimum load requirements of dome configurations* on page 5.

4. Attach the housing to the pipe or mount.
   - For pipe installations, thread the housing onto the pipe. If necessary, first turn the housing counterclockwise to compensate for the cable twisting.

   Note: Do not overtighten the plastic housing on the pipe mounting or the housing will crack and leak.

   - For wall-mount installations, use the fasteners that were provided with the mount.

Figure 8. Installing the pendant-mount housing

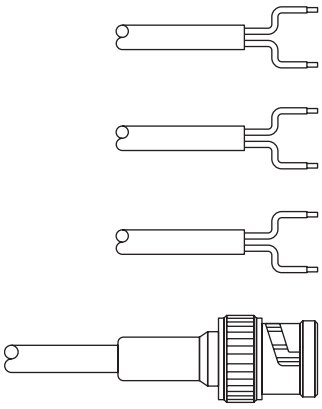

Typical pipe-mount
Ceiling
Water-sealing rubber boot
(for outdoor applications)
PTFE tape applied to pipe threads *after* the boot is slid up.
Soapy water sprayed on pipe *before* the boot is slid up.
See *Table 1, Minimum load requirements of dome configurations* on page 5.
Ceiling
Water-sealing rubber boot
(for outdoor applications)
PTFE tape
Housing lifted and threaded (turned clockwise) onto pipe.
If necessary, housing turned counterclockwise to compensate for cable twist.
Cables fed through pipe and housing.
Pendant-mount cabling
Cable entry hole
Dust seal
Upper bracket
Power cable
Cables feed as follows:
• All cables run down through the cable entry hole and the dust seal;
Typical wall-mount
Use the safety chain and screws provided.
Wall
Wall mount
Safety chain
Cables fed through mount and housing.

Preparing the cables

Which and how many cables you will be preparing depends upon whether you are setting up your dome to transmit video via its coaxial or UTP source, and how many video, data, and power cables you will be using.

To prepare the facility camera cables, terminate the cable ends as shown in *Figure 9*.

Figure 9. Prepared cables



Power: strip ends of wires

Data: strip ends of wires (UTP for RS-422 or STP for RS-485)

Note: Analog video and data wires can share the same jacket but must remain separate twisted pairs.

Video (UTP): strip ends of UTP wires

Note: Analog video and data wires can share the same jacket but must remain separate twisted pairs.

Video (coaxial): terminate coaxial cable with BNC connector

Note: Use only crimp-on BNC connectors. Do not use screw-on connectors.

Chapter 3 Wiring and the dome

This chapter explains how to wire the dome. One of the two boards that you will be handling while you wire the dome is inside of the housing. In this chapter:

Components used for basic and advanced operation 20
Wiring the housing board 22
Setting the termination 24

Components used for basic and advanced operation

Connect data, video, and power cables to the components in the dome for basic operation (*Figure 10*). How many cables you will be feeding into the housing depends upon how many video, data, and power cables you will be using. For pipe capacity, see *Cable management* on page 6.

The dome uses RS-485 for data communication. You can also use RS-422 for data communication. See *Cable requirements* on page 5 for more information on limitations.

Note: Some models have only RS-485 connection.

Figure 10. View of housing interface board

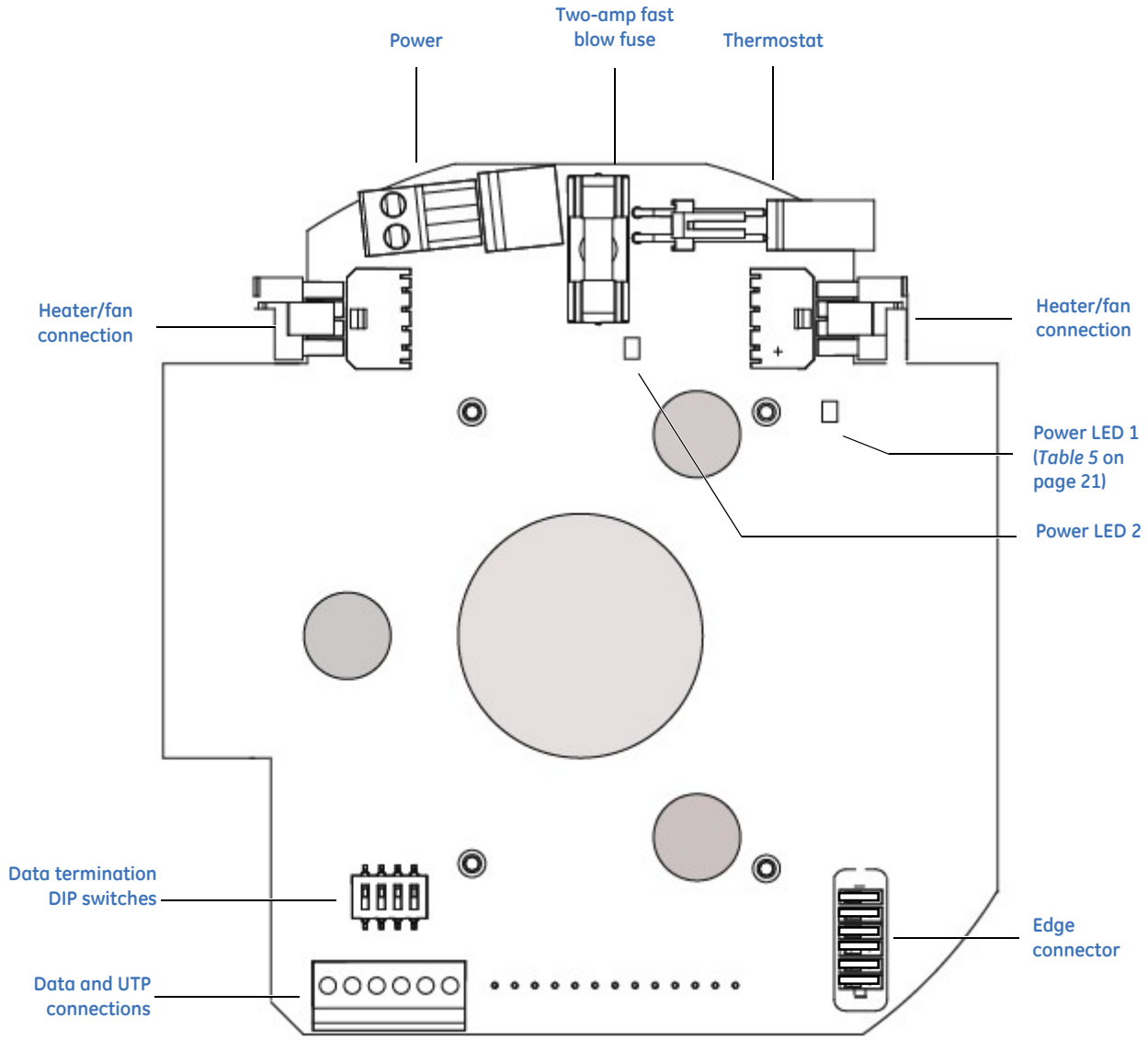


Table 5. Cyberdome II housing interface board LED functions

Configuration type		Red LED	Green LED
Full boat and pressure dome	Functions	All functions	UTC tuning indication
	Action	Always on	Blinks at a fast (7 Hz) rate when frequency shift keying (FSK) decoder is tuning.
			Blinks at a slow (0.5 Hz) rate when decoder is locked and receiving.
Low to low end	Functions	None - not connected	Activity indicator
	Action	None - not connected	Blinks at about a 7 Hz rate when processor is active.
			Also twinkles at varying rates when there is communication between the PTZ and the housing interface board.

Wiring the housing board

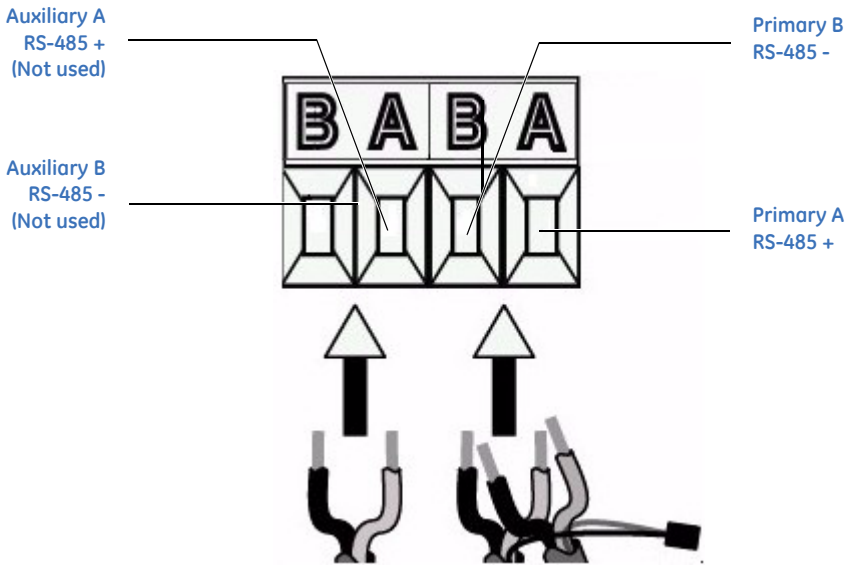
To wire the housing board, do the following:

WARNING: Do not run any cables next to the heaters. Doing so could damage the dome or cause an electrical fire.

1. Connect the facility data cables to the main connections, which are the B and A terminals on the provided 6-pin or 2-pin terminal strip (*Figure 11*). The main data connections on the terminal strip are for control wires that are coming in from the keypad. You may also daisy-chain the data signal to additional domes.

Note: If you are installing RS-485 data, float the shield at the dome and connect it at the keypad.

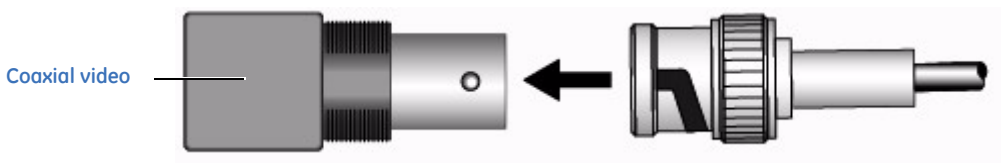
Figure 11. Data connections



2. Connect the facility video cable (*Figure 12*).

Note: Use only crimp-on BNC connectors. Do not use screw-on connectors.

Figure 12. Video connection

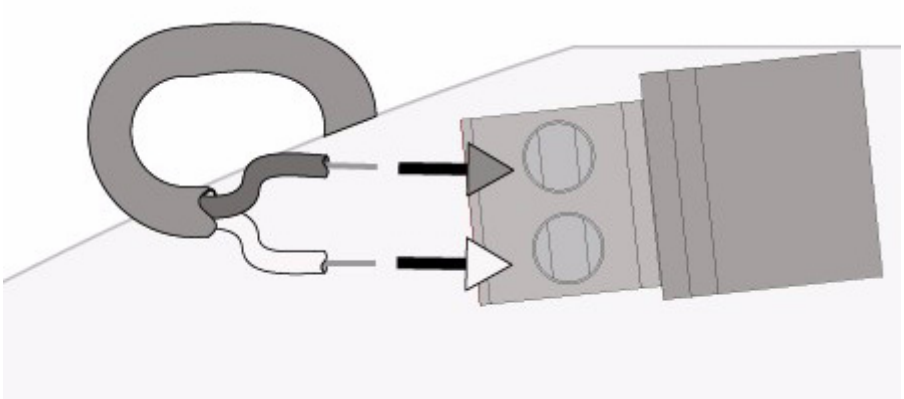


If you are installing UTP video, use the UTP terminals on the six-pin terminal strip. It provides connections for UTP video. If you are installing coaxial video, locate the BNC connector.

Note: UTP is only available on standard modules with a six-pin connector.

3. Connect the facility power cable (*Figure 13*). Use the provided 2-pin power terminal strip. If you are using a heavier gauge cable, ensure that it is properly seated in the connector.

Figure 13. Power connection



When power is received by the housing board through the power connection, the housing board's diagnostic power LED will appear orange.

Setting the termination

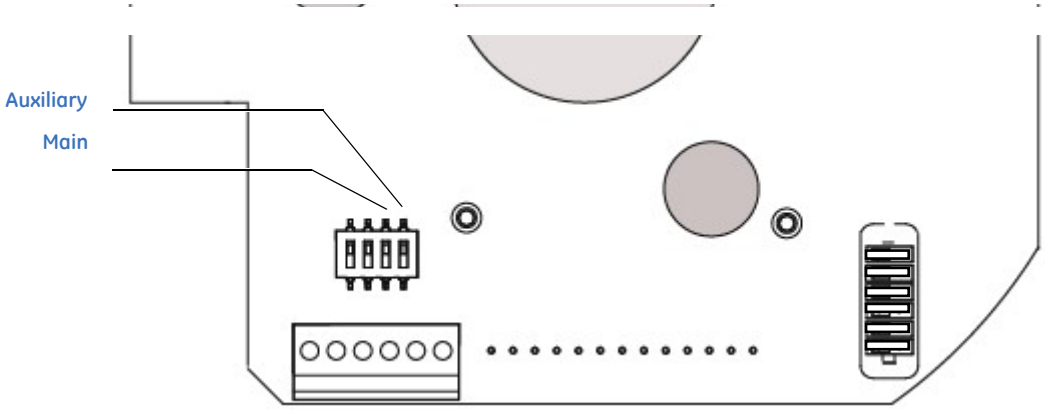
You must set the termination of the data signal in each dome (or device) to on or off. Only two of the four switches (3 and 4) on the DIP are used (*Figure 14*). Switches 1 and 2 are not used at this time, so it does not matter whether they are set to on or off. MAIN (pin 3) is for the dome input and AUX (pin 4) is for an auxiliary device output.

To set the termination, see *Figure 14* and do the following:

1. Set the termination to on if the dome or device is the final receiver location for the data signal.
2. Set the termination to off if the data signal needs to loop out to other domes or devices.

Note: The switches are set to *On* by default. You need to turn them *Off* if you are looping the data signal.

Figure 14. Termination switches



Chapter 4 Installing the camera assembly and dome

This chapter provides instructions for installing the camera assembly and dome.

In this chapter:

Set the protocol 26
Setting the camera's address 27
Installing the camera assembly 29
Installing the dome 30

Set the protocol

CyberDome II can use different protocols for communication. To use a protocol, you must set the DIP switches according to the protocol you want to use (*Figure 15*). Use the information in *Table 6* to set the DIP switches for the desired protocol.

Figure 15. Protocol switch

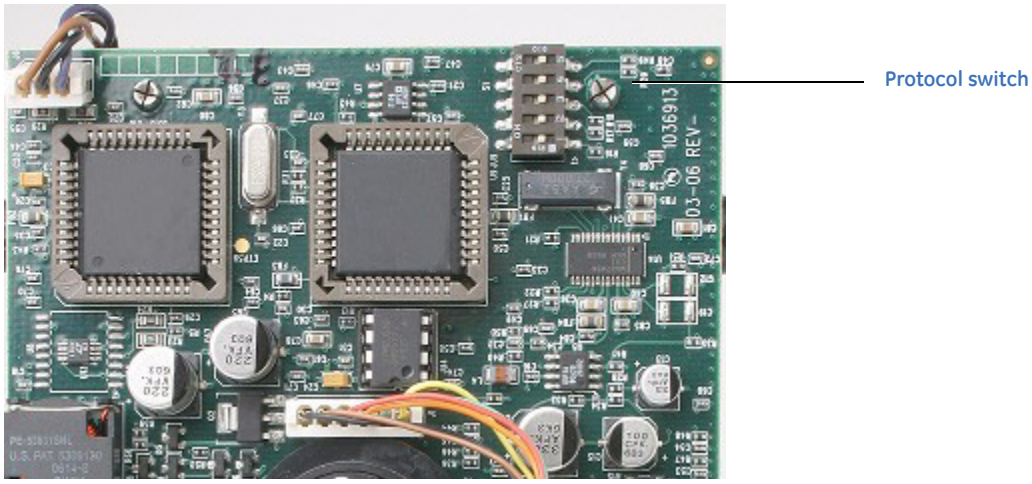


Table 6. Protocols

Protocol	Switch position (1 = on, 0 = off)
Automatic selection [a]	00000
Digiplex 4800	10000
Impac 9600	01000
ASCII 9600	11000
Pelco D Autobaud	00100
Pelco P 4800	10100
Ultrak 9600	01100
BBV	01110
Copy settings from PTZ to housing	01111
Copy settings from housing to PTZ	11111

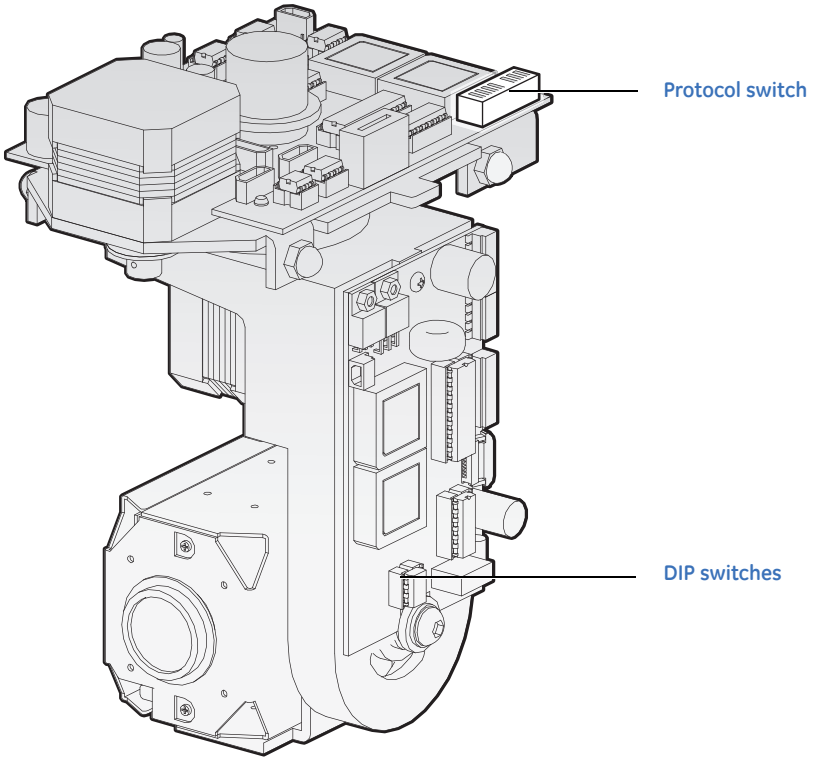
a. The Automatic selection will automatically determine only the GE protocols (Digiplex, Impac, and ASCII).

CyberDome II stores all programming information settings in nonvolatile memory in both the housing and in the PTZ. If the protocol switches are in any other configuration and the two memories are different, you will see *Memory* flashing onscreen, and when you first log onto the menu system, you will be asked which settings you would like to use.

Setting the camera's address

The main board of the camera assembly contains a multiposition DIP switch (*Figure 16*). These DIP switches are used to assign the camera a site address number.

Figure 16. Location of site address DIP switch



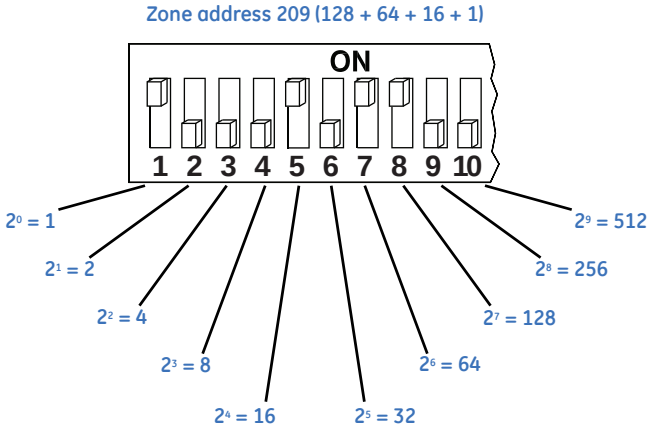
To set the DIP switches to indicate a site number, do the following:

1. Using *Table 7*, determine the DIP switch position values that add up to the site number.
2. Set the switches that correspond to those values to the ON position. See *Figure 17* on page 28 for an example.

Table 7. Dip switch positions and equivalent values

DIP switch position number	1	2	3	4	5	6	7	8	9	10	11	12
Equivalent value	1	2	4	8	16	32	64	128	256	512	--	--

Figure 17. Address DIP switches (set to 209)



3. Place the switches that correspond to those values in the on position.

Installing the camera assembly

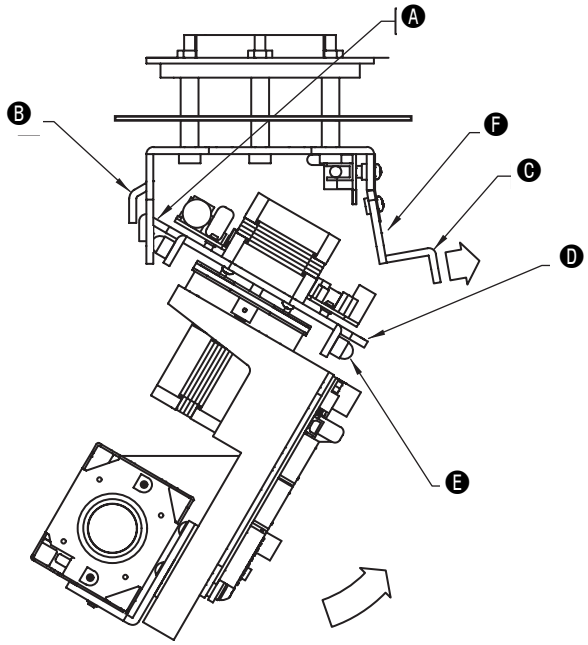
This section gives the procedure for installing the CyberDome II motorized pan/tilt assembly. Installation involves securing the pan/tilt assembly to the upper housing.

Note: The pan/tilt assembly may be installed while power is applied to the housing.

To install the pan/tilt assembly, do the following:

1. Insert the safety catch (A) through the channel in the retaining bracket (B) attached to the upper housing.

Figure 18. Installing the pan/tilt assembly



2. Push the spring latch handle (C) outward, while pivoting the pan/tilt assembly up until it is vertical. Secure the pan/tilt assembly by releasing the latch handle and engaging the catch tab (D).
3. Check to ensure that the four mounting nuts (E) are mated with the four alignment holes (F).

CAUTION: The heater/fans are operating when the housing is powered, and the heaters may be very hot.

Installing the dome

There are a variety of domes and housings. The interlocking clips and safety cables may vary, but all domes have them.

CAUTION: To prevent damage, do not touch the dome with your bare hands, do not place the dome face down on any surface, and protect the dome from dust. Oil and acid residue from your hands can etch some dome surfaces and is difficult to remove. Use a scratch-resistant cloth or gloves when handling the dome.

To attach the dome to the housing, see *Figure 19* on page 31 and do the following:

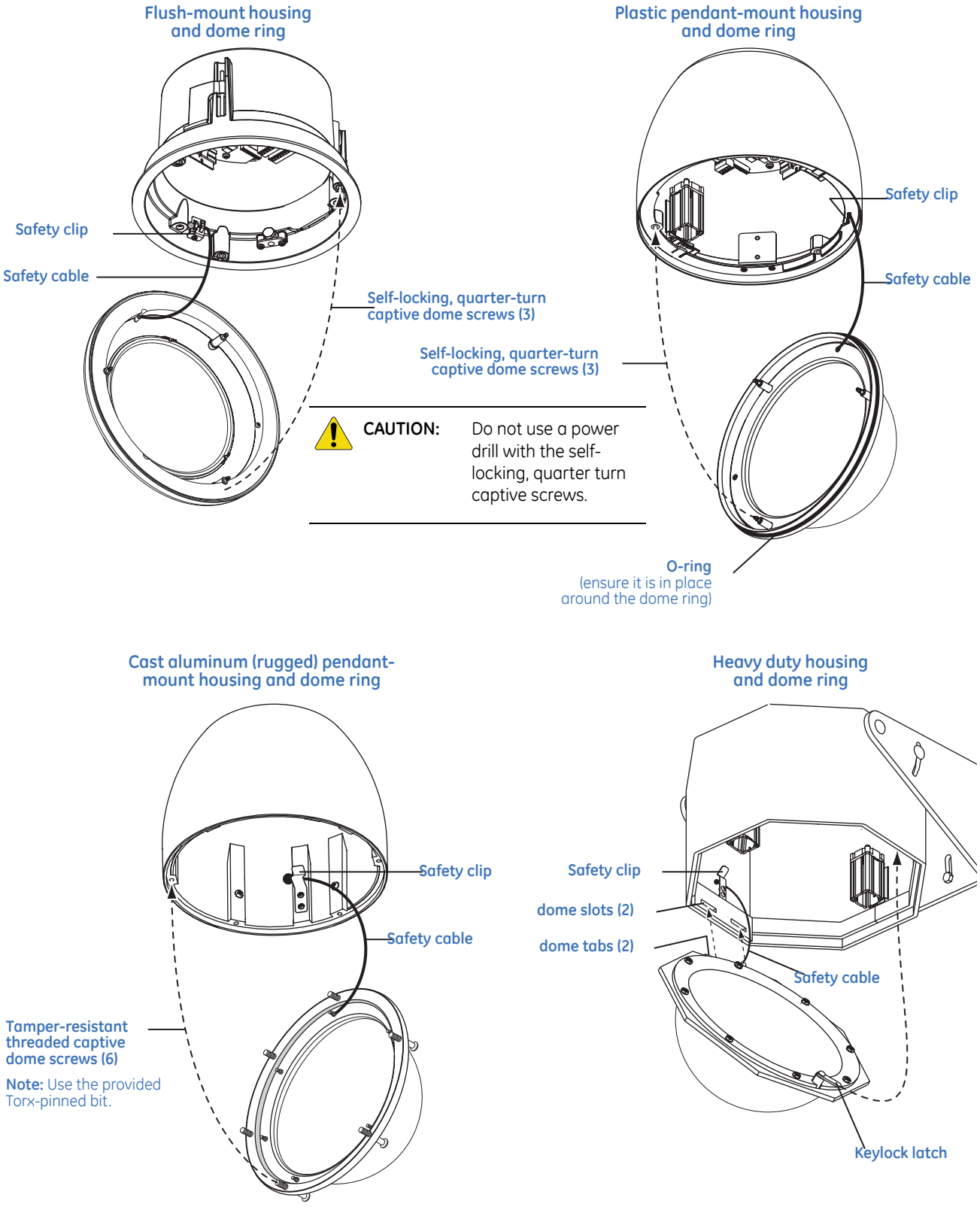
1. Fasten the dome safety cable to the housing's safety clip.
2. Swing the dome up to the housing and align the dome's screws with the housing's dome screw holes.

   If you are installing a plastic pendant-mount housing, there are alignment guides on the housing ring that straddle the rear-facing screw hole of the dome ring.
3. Use the following guidelines for tightening the dome screws.
   - If you are installing a plastic pendant-mount or flush-mount housing, the dome screws are self-locking, quarter-turn captive screws and *require only a quarter turn to tighten*.

CAUTION: Do not use a power drill with the self-locking, quarter-turn captive screws. A power drill can strip the heads of the screws or the inside of the screw inserts (in the housing) enough to necessitate replacing the housing.

   - If you are installing a flush-mount housing, the dome ring contains a foam pad that requires you to push up while turning the screws.
   - If you are installing the dome on a rugged vandal-resistant housing, the screws are tamper-resistant and require the provided security torx-pinned bit for tightening. Do not tighten these screws to more than 17 lb. inches (192 cNm) in torque.
4. Clean any fingerprints off of the dome. See *Cleaning the dome* on page 36.

Figure 19. Attaching the dome to the housing (cameras not shown to show safety clips clearly)


Flush-mount housing and dome ring
Safety clip
Safety cable
Self-locking, quarter-turn captive dome screws (3)
CAUTION: Do not use a power drill with the self-locking, quarter turn captive screws.
Plastic pendant-mount housing and dome ring
Safety clip
Safety cable
Self-locking, quarter-turn captive dome screws (3)
O-ring
(ensure it is in place around the dome ring)
Cast aluminum (rugged) pendant-mount housing and dome ring
Safety clip
Safety cable
Tamper-resistant threaded captive dome screws (6)
Note: Use the provided Torx-pinned bit.
Heavy duty housing and dome ring
Safety clip
dome slots (2)
dome tabs (2)
Safety cable
Keylock latch

Chapter 5 Troubleshooting, maintenance, support

This chapter provides information to help you troubleshoot problems, perform simple preventive maintenance procedures, and contact technical support in case you need assistance with your GE equipment.

In this chapter:

Troubleshooting 32
Housing board power indication 32
Common installation issues 32
Maintenance 34
Cleaning the dome 34
Contacting technical support 35
Online publication library 35

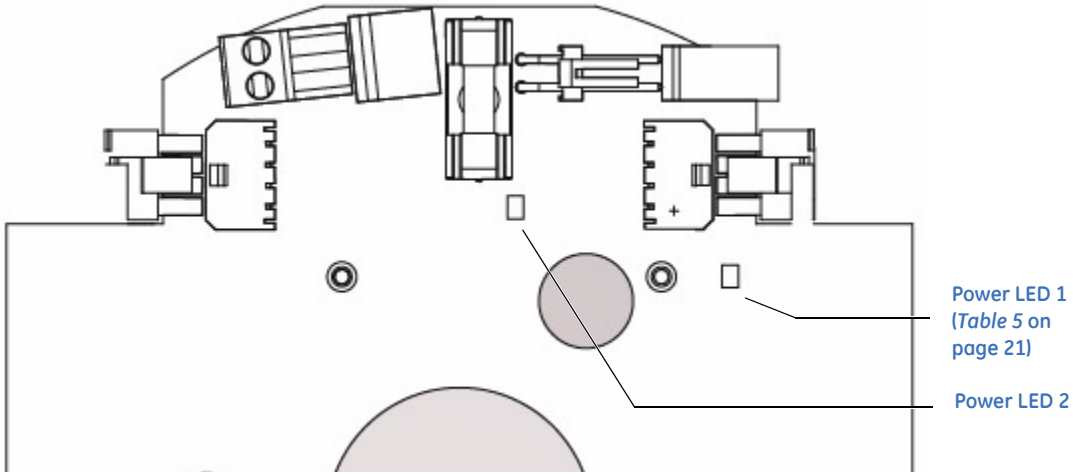
Troubleshooting

This section provides information to help you diagnose and solve various problems that may arise while configuring or using your GE product and offers technical support contacts in case you need assistance. (See *Contacting technical support* on page 37.)

Housing board power indication

When power is received by the housing board through the power connection, the housing board diagnostic LED appears orange (*Figure 20*). It appears orange because the red and green internal LEDs both illuminate. The housing board power LED is located on the PC board that is attached to the underside of the upper bracket. It can be seen before the camera assembly is installed.

Figure 20. Housing board power indication



Common installation issues

Following are the most common troubleshooting issues and their solutions.

- *The dome is resetting during power-up, not powering up at all, or powering up but not operating as expected.*

  Verify that you are supplying sufficient power for your model of dome. See *Power requirements* on page 7.

- *Video is not appearing on the monitor screen.*

  If the dome is not powered or the programming is not running properly, remove and reinstall the camera assembly. See *Installing the camera assembly and dome* on page 25.

  If the video still does not appear, then check the video cable and verify that it is properly connected. For UTP video, ensure that the + and - ends of the cable are correctly connected to maintain the polar sensitivity of the UTP video cable. See *Wiring the housing board* on page 22.

- *Either there is video, but no PTZ control, or Protocol flashes on the screen.*

  First, verify the address of the dome. You can do this easily by pressing and holding the ***view*** key on the KTD-405 keypad. If the PTZ is receiving commands from the keypad, the dome's information will be

displayed on the monitor screen. If necessary, correct the address and/or protocol using the procedure in *Setting the camera's address* on page 27.

If you still don't have control of the PTZ, verify that the data cable is properly connected. See *Wiring the housing board* on page 22.

Finally, try resetting (cycling) the power to the dome by turning the power off then on.

Maintenance

Perform the following maintenance, when necessary or directed to.

Cleaning the dome

Use the following procedures for cleaning the dome. Be aware that the interior of the dome requires extra care in cleaning. Use only the procedures provided below.

CAUTION: To prevent damage, do not touch the dome with your bare hands, do not place the dome face down on any surface, and protect the dome from dust. Oil and acid from your hands can etch some dome surfaces and are difficult to remove. Use a scratch-resistant cloth or gloves when handling the dome. Failure to comply may void your warranty.

Cleaning the exterior of the dome

To clean the exterior of the dome:

CAUTION: Before using any cleaning agent, test on an inconspicuous spot of the unit to ensure that it doesn't damage the surface.

Use any nonabrasive cleaning cloth and a cleaning agent that is safe for use on polycarbonate or acrylic plastic. Liquid or spray cleaner/wax suitable for fine furniture is acceptable.

Do not use this procedure for cleaning the interior of the dome. See *Cleaning the interior of the dome*.

Cleaning the interior of the dome

Use these procedures to clean the interior of the dome:

- To remove dust and other surface contaminants, use clean, dry, pressurized air to gently blow off loose material.
- To remove heavier contaminants, rinse the dome with water and immediately dry it with clean, dry, pressurized air to prevent water spots.
- To remove stubborn contaminants, use a "wick" to clean the dome's surface. To make the wick:
  a. Use a high-quality, soft paper towel.
  b. Roll a section of the paper towel into a tightly wound tube, tear the tube in half, and wet a fuzzy end with 75% standard rubbing or isopropyl alcohol.
  c. Hold the dome with its opening facing downward and wipe the interior with the wick (held at its dry end) using a circular motion starting from the outside and spiraling into the center.
  d. Use a new wick for each of two additional passes over the dome.

Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, you may contact technical support during normal business hours (Monday through Friday, excluding holidays, between 6 a.m. and 5 p.m. Pacific Time).

Table 8. Sales and support contact information

	Customer service	Technical support
Phone	**Toll-free:** 888.GESECURity (888.437.3287) in the US, including Alaska and Hawaii; Puerto Rico; Canada. Outside the toll-free area: 1.503.885.5700.	
E-mail	*gesecurity.customerservice@ge.com*	*nstechsrv@ge.com*
Fax	888.329.0331	888.329.0332

Note: Be ready at the equipment before calling for technical support.

Online publication library

Another great resource for assistance with your GE product is our online publication library, available to all of our customers. To access the library, go to our website at the following location:

`http://www.gesecurity.com`

In the **Tools** area at the top, click the *Publication Library* link. After you register and log on, you may search through our online library for the documentation you need.[1]

1. Many GE documents are provided as PDFs (portable document format). To read these documents, you will need Adobe Acrobat Reader, which can be downloaded free from Adobe's website at `www.adobe.com`.

Appendix A Installing the individual mounts

This appendix provides the installation instructions for the mounts that are shipped with the dome kits. Dome kits include a wall-mount arm and a T-bar support kit. Instructions for all other mounts (arms, adapters, and brackets) are shipped with those mounts.

In this appendix:

GEA-102 wall-mount arm 40
Installing the wall-mount arm 40
Opening a conduit hole 43
GEA-114 T-bar ceiling support kit 45
Installing the T-bar ceiling support kit 46

GEA-102 wall-mount arm

This cast aluminum wall-mount arm is used to mount a dome to a vertical surface. It is for indoor or outdoor use and mates with both the plastic indoor and cast aluminum outdoor pendant housings. It can be attached directly to a vertical surface or mated with a bracket (corner-mount, pole-mount, or roof-mount). Instructions for mating this mount to the various brackets are provided in the instructions for those brackets. The following instructions explain how to install the wall-mount arm directly to a vertical surface.

Installing the wall-mount arm

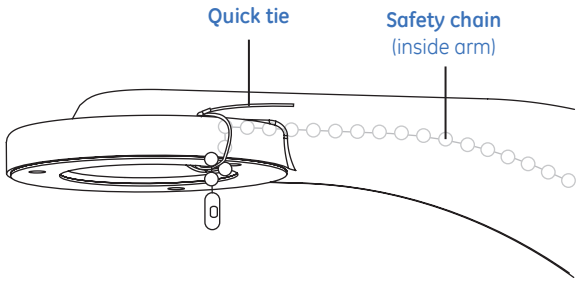
To install the wall-mount arm, see the corresponding figures and do the following:

CAUTION: For all installations, heed these cautions:

- Complete all installation steps before supplying power to the dome.
- To ensure proper operation of a PTZ unit, install the mount level.
- For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes. See *Table 1, Minimum load requirements of dome configurations* on page 5.

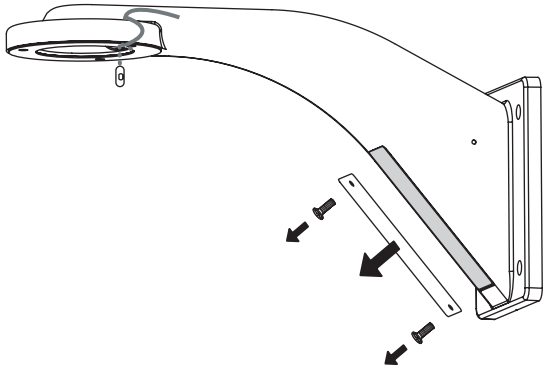
1. The facility cables usually come out of the mounting surface and enter the arm through the rear opening in the base. If the cables are attached externally to the mounting surface and need to enter the arm through the side, open a conduit hole in the side of the arm with the instructions given in *Opening a conduit hole* on page 43.
2. The factory secures the end of the safety chain to the collar opening with a quick tie (*Figure 21*). To keep the safety chain from slipping into the arm, leave the safety chain tied until you attach the dome to the arm.

Figure 21. Leaving the safety chain tied



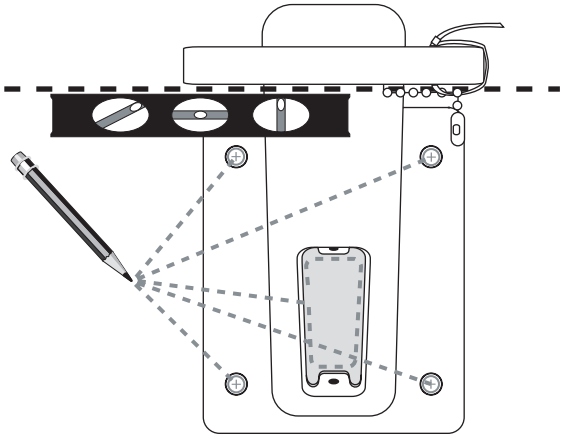
3. Remove the access cover (*Figure 22*).

Figure 22. Removing the access cover



4. Using the arm as a template, place it level against the mounting surface and mark the position of the mounting holes, and if needed, the cable entry hole (*Figure 23*).

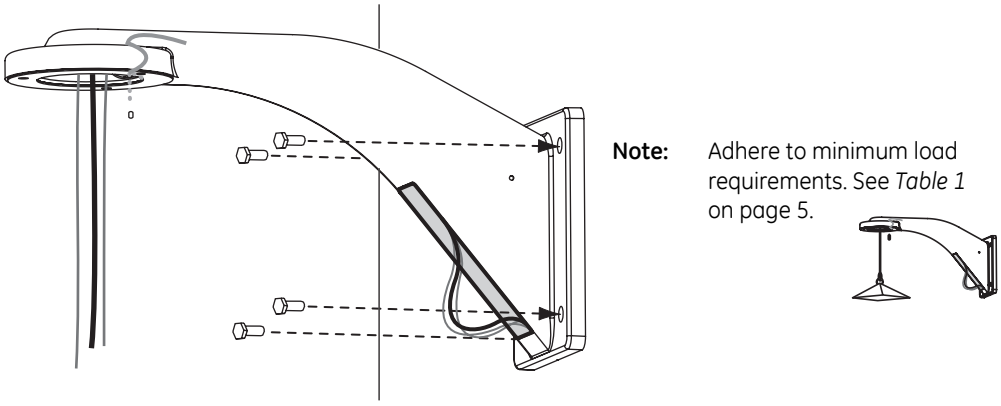
Figure 23. Marking the mounting and cable entry holes



5. Following all local codes, drill and prepare the mounting holes, and if needed, cut the cable entry hole.
6. Feed the cables through the cable entry hole in the mounting surface or through the conduit attached to the opened conduit hole, and up through the arm.
    - Pull enough cable to make connections. You can always pull back unneeded length later.
    - Do not terminate the cables yet. Otherwise, they will not fit through the dust seal of the housing.
    - How many cables you pull depends upon how many video, data, and power cables you are using. See *Wiring and the dome* on page 19.

7. Securely fasten the arm to the mounting surface with the appropriate fasteners (*Figure 24*). Again, ensure that it is level.

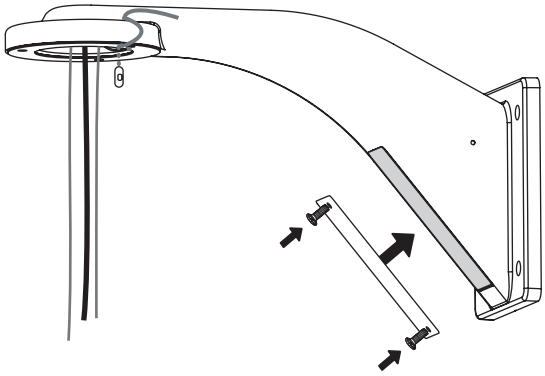
Figure 24. Fastening the arm to the mounting surface



Note: Adhere to minimum load requirements. See *Table 1* on page 5.

8. If needed, seal all mounting holes so that no moisture can leak into the mounting surface.
9. Push inside the arm or pull taut any looped cables that are extending out of the access area.
10. Reattach the cover (*Figure 25*).

Figure 25. Reattaching the access cover



11. Before you attach the housing to the arm, attach the housing safety cable to the arm safety chain (*Figure 26*).

    Note: The safety cable for rugged housings is metal and for plastic housings is a beaded cord.

    a. Cut the quick tie on the safety chain.

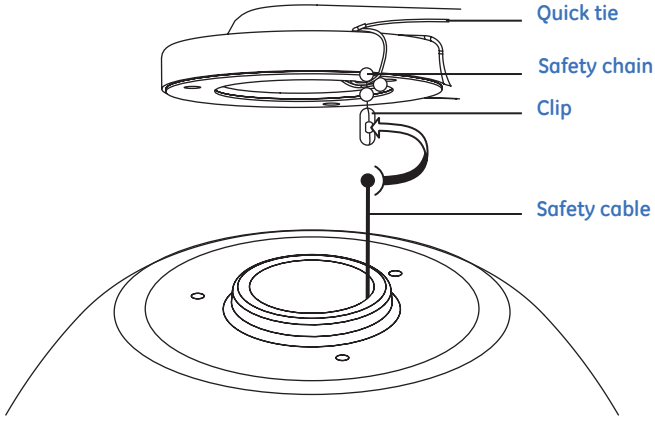
    b. Hold the housing near the arm's collar.

    c. Slide the ball of the safety cable into the clip of the safety chain.

    d. Ensure that the safety chain and cable can bear the housing's weight.

    e. Lower the housing until the safety chain and cable are taut.

Figure 26. Attaching the housing safety cable to the arm safety chain



12. Return to *Installing the housing* on page 15 to finish installing the dome.

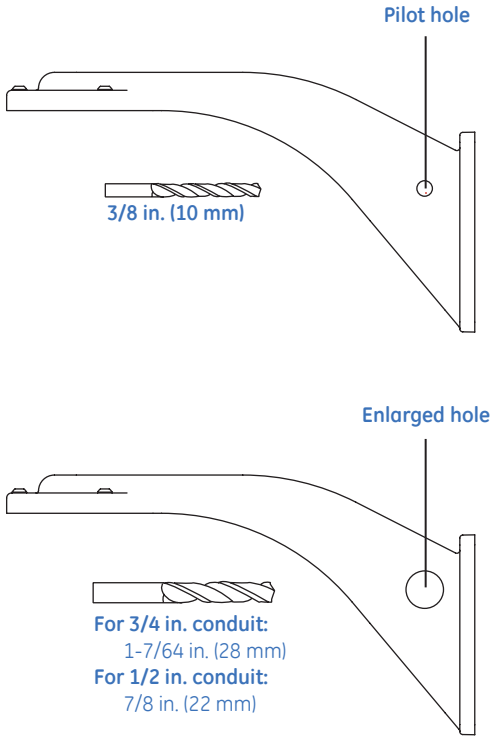
Opening a conduit hole

Open a conduit hole for a 3/4 in. or 1/2 in. conduit connector, if you need to bring the facility cables in through the side of the arm.

To open the conduit hole, see *Figure 27* on page 44 and do the following:

1. Locate the dimple on the side of the arm.
2. Drill a 3/8 in. (10 mm) pilot hole through the dimple.
3. Enlarge the pilot hole to 1-7/64 in. (28 mm) for a 3/4 in. conduit connector or to 7/8 in. (22 mm) for a 1/2 in. conduit connector.
4. Return to step 2 of *Installing the wall-mount arm* on page 40.

Figure 27. Opening a conduit hole



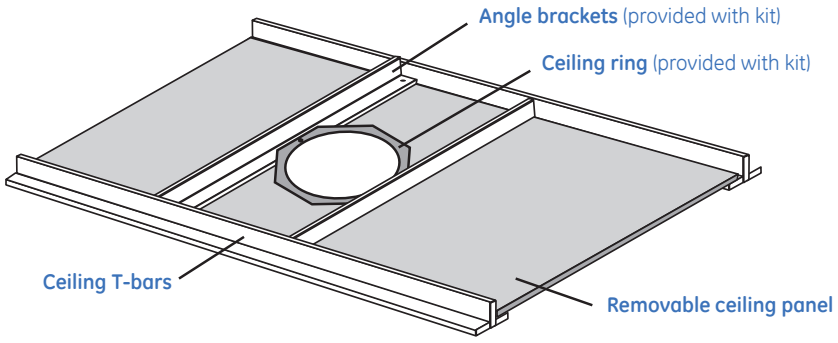
GEA-114 T-bar ceiling support kit

The T-bar support kit is used to install a flush-mount dome into a paneled T-bar ceiling (*Figure 28*). T-bar ceilings consist of a grid of metal T-bars that support removable panels. The kit distributes the weight of the dome between the T-bars of the ceiling, instead of resting it on a panel.

Product contents

- 1 ceiling ring
- 2 angle brackets
- mounting hardware (six 6-32 x 2-in. flathead screws)
- installation instructions

Figure 28. Parts of a supported T-bar ceiling



Installing the T-bar ceiling support kit

One side of the ceiling ring is flat; the other side has two press nuts. Orient the ceiling ring as directed in the instructions.

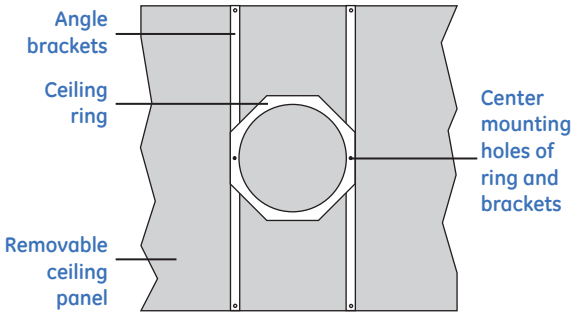
CAUTION: For all installations, heed these cautions:

- Complete all installation steps before supplying power to the dome.
- To ensure proper operation of a PTZ unit, install the mount level.
- For safety, the mounting surface, hardware, and procedure used for securing the dome must support the weight of the dome, mount (if used), cables, and any structural or environmental vibration according to local codes. See *Table 1, Minimum load requirements of dome configurations* on page 5.

To install a T-bar ceiling support kit, see the corresponding figures and do the following:

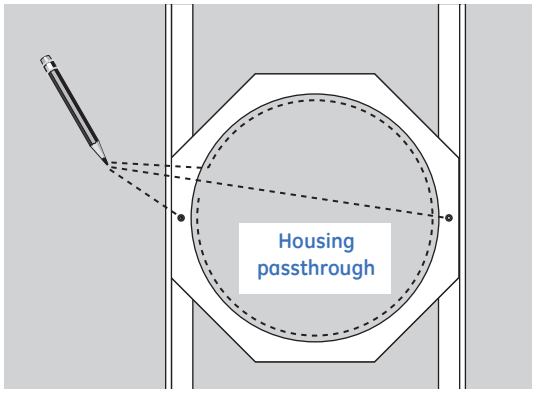
1. Remove the removable ceiling panel where the flush-mount housing will be installed.
2. Center the angle brackets and ceiling ring (flat side to the brackets) on the removable ceiling panel aligning their center mounting holes (*Figure 29*).

Figure 29. Aligning the angle brackets and ceiling ring on the panel



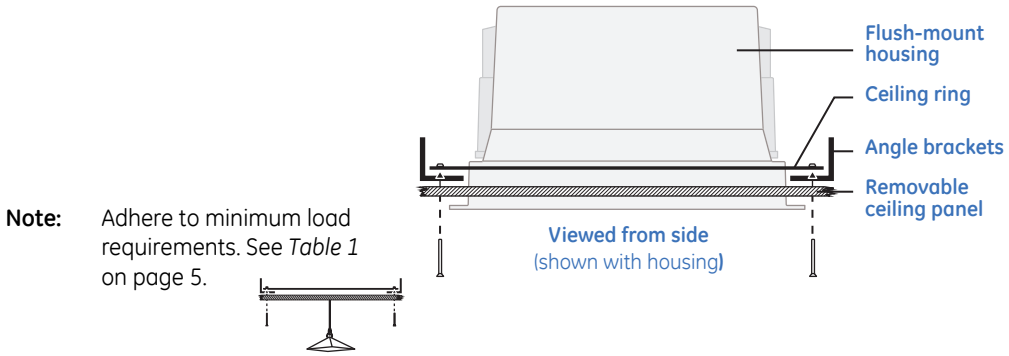
3. Using the ceiling ring as a template, mark the position of the center mounting holes and the housing passthrough hole on the removable ceiling panel (*Figure 30*).

Figure 30. Marking the mounting holes and housing pass-through hole



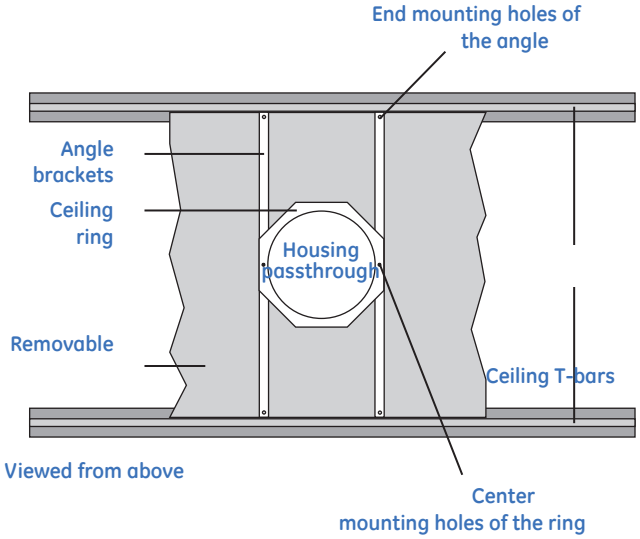
4. Following all local codes, drill the mounting holes (use a 3/16 in. drill bit) and cut the housing passthrough hole. Drill/cut all holes perpendicular to the panel and be careful not to overcut the housing passthrough hole.
5. Reset the angle brackets and ceiling ring on the removable ceiling panel aligning the center mounting holes of the brackets and ring with the drilled holes in the panel. Remember that the flat side of the ceiling ring lies on the angle brackets.
6. Using two of the fasteners provided, fasten the ceiling ring and the brackets to the panel through the center mounting holes (*Figure 31*). Tighten until snug, but not overtight.

Figure 31. Fastening the support kit onto the removable ceiling panel



7. Using the last four of the fasteners provided, fasten the ends of the angle brackets to the ceiling panel.
8. Reinstall the panel in the ceiling (*Figure 32*).

Figure 32. Installed T-bar support kit



9. Return to *Installing the housing* on page 12 to finish installing the dome.